

## Carswell/Plant 4



# FINAL 2001 GROUNDWATER SAMPLING AND ANALYSIS PLAN AND 2000 ANNUAL REPORT

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## INTRODUCTION

Naval Air Station Fort Worth Joint Reserve Base (NAS Fort Worth JRB), formerly Carswell Air Force Base (AFB), is in the process of planning and conducting activities for the identification, remediation, and closure of contaminated sites at the base through the Installation Restoration Program (IRP). The IRP is the primary mechanism of the Department of Defense for environmental response actions on U.S. Air Force installations. IRP activities are governed by provisions of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Resource Conservation and Recovery Act (RCRA), and other applicable federal and state regulations. The IRP at NAS Fort Worth JRB is being conducted through the combined efforts of the Air Force Center for Environmental Excellence (AFCEE) and the Air Force Base Conversion Agency (AFBCA).

## GROUNDWATER SAMPLING AND ANALYSIS PLAN

Final Work Plans have been developed for the 2001 Basewide Groundwater Sampling and Analysis Plan (GSAP). These plans set forth the GSAP for groundwater monitoring activities to be conducted in 2001 at the NAS Fort Worth JRB.

The most significant change occurring between the 2000 and 2001 groundwater sampling programs is the

shift from performing groundwater sampling on a quarterly basis to semi-annually. The first semi-annual sampling event was completed in April 2001. The second sampling event will be performed in October 2001. Approximately 45 wells are scheduled to be sampled during each semi-annual field event.

As part of the IRP, the GSAP fulfills both short-term and long-term groundwater monitoring objectives. The fulfillment of these objectives, except for the units that currently have long-term monitoring (LTM) requirements as part of the approved or proposed closure plans, is not presently a regulatory requirement. Consequently, the 2001 GSAP is a voluntary action on the part of the U.S. Air Force to conduct basewide monitoring of the groundwater flow and quality. A basewide groundwater sampling and analysis program was initiated for NAS Fort Worth JRB in April 1995 to address groundwater contamination associated with various Solid Waste Management Units (SWMU) and Area of Concerns (AOC) identified on the base. The 2001 GSAP was developed based on the results of the three quarterly sampling rounds conducted as part of the 2000 program, as well as other available data. Monitoring objectives for the 2001 program have been established to ensure that adequate data are collected for the evaluation of the critical exposure pathways involving groundwater. The GSAP monitoring

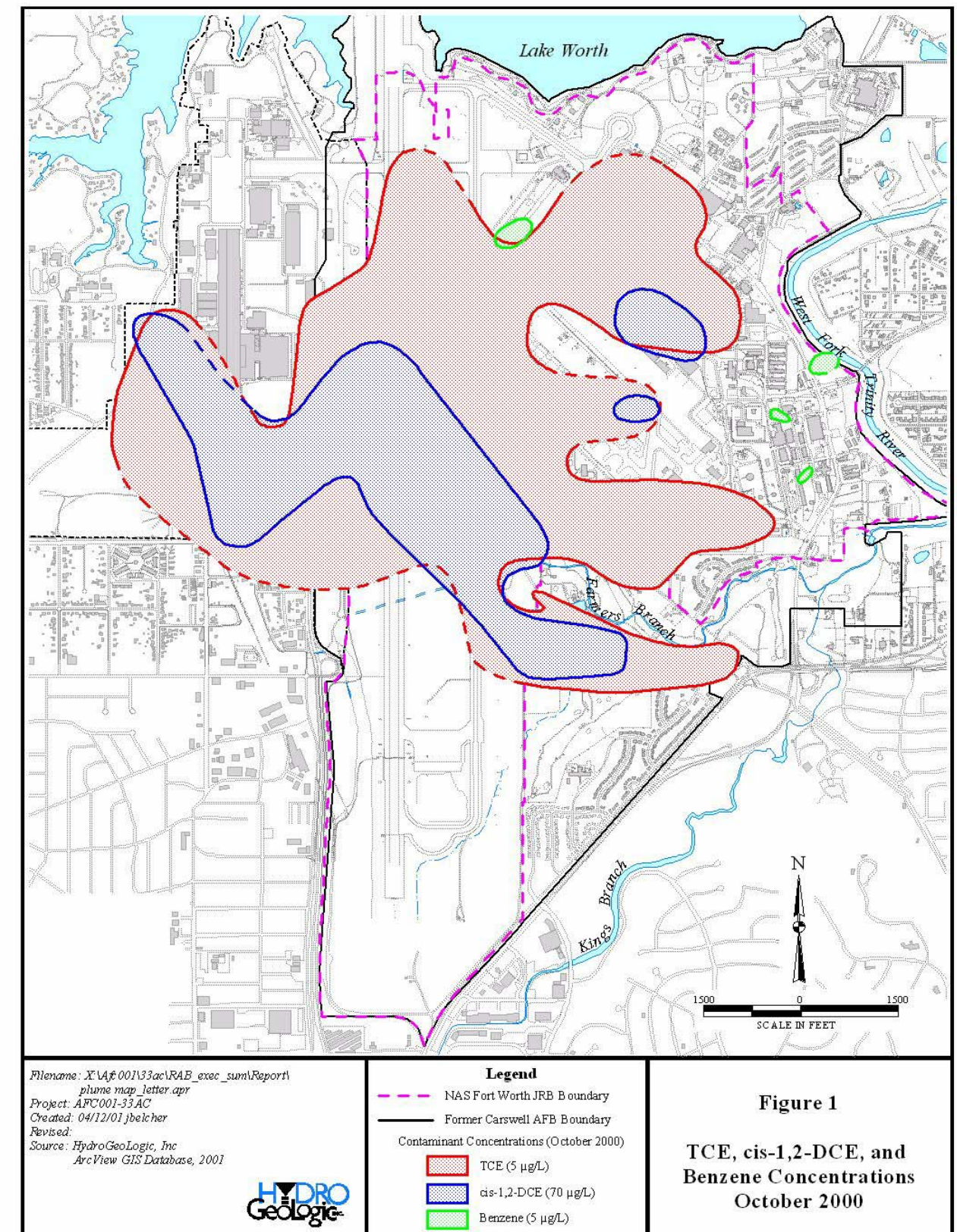
objectives are described in the next column.

- **Critical Groundwater Exposure Pathways Evaluation** - collect data to investigate (1) off-site exposure to groundwater sources used for drinking water, and (2) on-site and off-site exposure to surface water bodies;
- **Additional Source and Plume Delineation** - define horizontal and vertical migration of contamination associated with miscellaneous hot spots and potential source areas where data are not currently available; and
- **Natural Attenuation Monitoring** - collect data to determine the extent to which natural attenuation of trichloroethene (TCE) is occurring.

## 2000 ANNUAL REPORT

The Final 2000 Annual Report was submitted in March 2001. The purpose of the Annual Report is to summarize and interpret the results of the 2000 quarterly groundwater sampling program at NAS Fort Worth JRB. The interpretation includes evaluating the data for any trends and determining whether or not the objectives of the 2000 GSAP were met.

The first 2000 monitoring objective was to collect data to investigate (1) off-site exposure to groundwater sources used for drinking water, and (2) on-site and





off-site exposure to surface water bodies. Perimeter wells were designated to monitor potential impacts to off-site receptors. The data collected from perimeter wells and from other wells sampled as part of site investigations provided adequate basewide coverage to fulfill the objective.

The second monitoring objective for the 2000 GSAP was to conduct sampling to fulfill current LTM requirements associated with the closure of SWMUs and AOCs. All regulatory requirements for groundwater monitoring at AOC 4, AOC 1, AOC 7, and SWMU 68 were carried out simultaneously with the 2000 GSAP. The 2001 GSAP will continue to meet groundwater sampling requirements for AOC 1.

The third monitoring objective for the 2000 GSAP was to define horizontal or vertical migration of contamination associated with miscellaneous hot spots

and potential source areas where data are not currently available. A total of 43 monitoring wells located within and around the TCE plume were selected to provide additional source and plume delineation. Many of these wells provided additional characterization of the TCE and cis-1,2-dichloroethene (DCE) plumes. The data collected in 2000 provided the most complete picture of the contamination at the site to date. A comparison of TCE data over time indicates a fairly stabilized plume, with little difference in the downgradient extent of the TCE over time. The extent of TCE is depicted in Figure 1.

The fourth monitoring objective was to collect data to demonstrate that natural attenuation of TCE is occurring.

The evidence to support natural attenuation of TCE is minimal. While

some degradation of TCE is occurring as evidenced by the concentrations of cis-1,2-DCE at the base, other natural attenuation data collected, including dissolved oxygen, ethane, ethene, sulfate, nitrate, total organic carbon, and vinyl chloride, do not indicate that conditions are favorable for complete dechlorination.

**For More Information:**  
*If you would like more information, please see our website at <http://www.afcee.brooks.af.mil/er/carswell/nasfw/> or contact Michael Dodyk, HQ AFCEE, at (817) 782-7167 or via e-mail at [Mike.Dodyk@carswell.af.mil](mailto:Mike.Dodyk@carswell.af.mil).*